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PATENT
Case No. 420 P 013

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
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Hartmut Schulz)
)
Serial No. 10/006,318)
)
Filed: November 13, 2001)
)
For: DECORATIVE PAPER WITH)
A HIGH OPACITY)

Examiner: Peter Chin

Group Art Unit: 1731

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Commissioner for Patents ,
P.O. Box 1450, Alexandria, VA 22313-1450 on

July 22, 2003
(Date of Deposit)

Shannon Wallace
Name of applicant, assignee, or Registered Rep.

Shannon Wallace 7/22/03
Signature Date

REPLY TO FIRST OFFICE ACTION
IN CONTINUED EXAMINATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 23313-1450

Dear Sir:

This is in reply to the first Official Office Action(Paper No. 11), mailed April 22, 2003 in the above captioned continued examination application.

All of the claims that had previously been allowed, claims 1, 2 and 4-6, were rejected as obvious under 35 USC §103(a) over SHULTZ (DE 199 12 149) in view of the COUNTER Pulp and Paper Canada article. Both SCHULTZ and COUNTER were cited by applicant in an Information Disclosure Statement that was filed concurrently with

the filing of the Request for Continued Examination (RCE)in this appliaction. SCHULTZ is one of applicant's own patents.

SCHULZ discloses a decorative raw paper which includes a pulp mixture of a non-modified and a cationic modified pulp and a filler. This pulp mixture improves the dry strength in such cases where no wet strength agent is added to the paper pulp. SCHULZ does mention that the decorative raw paper may comprise fillers such as titanium dioxide, talcum or mixtures thereof. However, SCHULZ is silent on the D50 particle size distribution of the fillers.

The COUNTER publication was cited for a disclosure of particle sizes and was relied upon to modify SCHULZ to reject the claims. However, the COUNTER publication differs from either SCHULZ or the present invention in several important and critical aspects.

In one of these critical aspects the COUNTER publication does not disclose a decorative raw paper either as in SCHULTZ or the present invention. COUNTER discloses the effects of extenders in a mixture with titanium dioxide in coatings **on** conventional paper.

Thus, the results for opacity shown in COUTNER for the coating **on** conventional paper are not comparable with opacity measurements obtained with a decorative raw paper. In the decorative raw paper of SCHULZ and the present invention pigment particles are distributed **in** the pulp mixture and have formed agglomerates in contrast to a coating **on** the paper as in COUNTER. Thus, a high

number of light refractive centers are formed at the surface pigment/air interface. The opacifying effect of the pigment results from the difference of the refractive indices at this interface. The opacity is better the larger the difference between the refractive indices at the pigment/air interface. Moreover, light scattering at the fiber surface increases opacity. If one replaces a part of the pigment with a high refraction index by a pigment with a low refraction index, the difference in the refraction indices at the surface pigment/air interface becomes less and the opacity is decreased. With the later impregnation which occurs in the manufacture of a decorative raw paper, the number of light refraction centers at the pigment/air interface is decreased because the fiber surface is coated with the impregnation agent resulting in an essential decrease of opacity. Thus, a sufficient opacity in decorative papers up to now was achievable with only titanium dioxide.

In a pigment coating as in COUNTER the pigment is homogeneously located in a high concentration in a binder matrix as a coating **on** the paper surface. The opacifying effect of the pigment at such a location is different as compared to the pigment **in** the paper core as is the case with a decorative paper. Moreover, in a decorative paper the opacity is decreased by the impregnation resin which is applied after the paper has been formed with the pigment in it. Thus, the conditions under which the pigment will

provoke an opacifying effect are different.

Accordingly, the results shown in COUNTER cannot be transferred to the decorative raw paper of either the present application or SCHULZ.

In another critical aspect, on page 124, upper part of the middle column of COUNTER, the optical properties, the absorption capacity and the printability of papers are examined which in addition to titanium dioxide and clay include silica, calcined clay, aluminum oxide hydrate or talc. The optical results are presented in FIGS. 3 to 5 on page 125 of COUNTER. The basis for these results are coatings which include 20 parts pigment (TiO_2), 80 parts clay and additionally an extender to replace a part of titanium dioxide. Thus, unlike the present invention clay is always present in the coatings according to COUNTER, and significantly in quite large amounts (p. 124, FIG. 1; p. 125, FIG. 3).

Thus, the results on page 125 of COUNTER of opacity and clarity are obtained with a mixture titanium dioxide/clay/extender and in which the clay forms a principal amount (80%) of the pigment, whereas TiO_2 is the principal pigment which is to be extended in the claimed invention.

And significantly, FIGS. 4 and 5 on page 125 of COUNTER show that mixtures of titanium dioxide and a single extender provide clearly inferior optical properties than titanium dioxide alone

contrary to the present invention. These poor results are avoided by the present application.

That applicant is successful is shown with the opacity results in the table on page 10 of the present application. As shown in that table, in Comparative Example V1 only titanium dioxide was used. In the other Examples B1 to B4 mixtures of titanium dioxide and talcum were use. Those examples show opacities which are about the same as compared to the pure TiO_2 of Comparative Example V1.

These results are markedly different from the results of COUNTER where the COUNTER mixtures do not come close to achieving the opacity quality of titanium dioxide as in the present invention.

Accordingly, COUNTER does not disclose a decorative raw paper as in the present claimed invention. Thus, there is nothing in the disclosure of COUNTER that would cause the skilled person in the art to put the pigments **in** the paper as in SHULTZ or the present invention rather than **on** the paper as in COUNTER. Moreover, COUNTER examines the opacity in a coating **on** paper and not the opacity of the paper as such. Finally, as mentioned above COUNTER teaches the presence of two pigments with an additional extender, for example, talc. This is three pigments the most prominent of which is clay (80%) and not TiO_2.

Finally, COUNTER mentions on page 127 under "Conclusions" that particle size and shape are the factors which are determinate for

the pore volume of the dried coating. Thus, he concludes that pore volume has an important impact on the opacity of the coating, and suggests that clay is the best extender in a mixture with titanium dioxide as far as the opacity of the coating is concerned. COUNTER does not suggest talc to be the best as in the present claimed invention.

For the above reasons, it is respectfully submitted that all of the claims remaining in the present application, claims 1 and 3-6, are in condition for allowance. Accordingly, favorable reconsideration and allowance are requested.

Respectfully submitted,

Dated: 7/22/03

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